



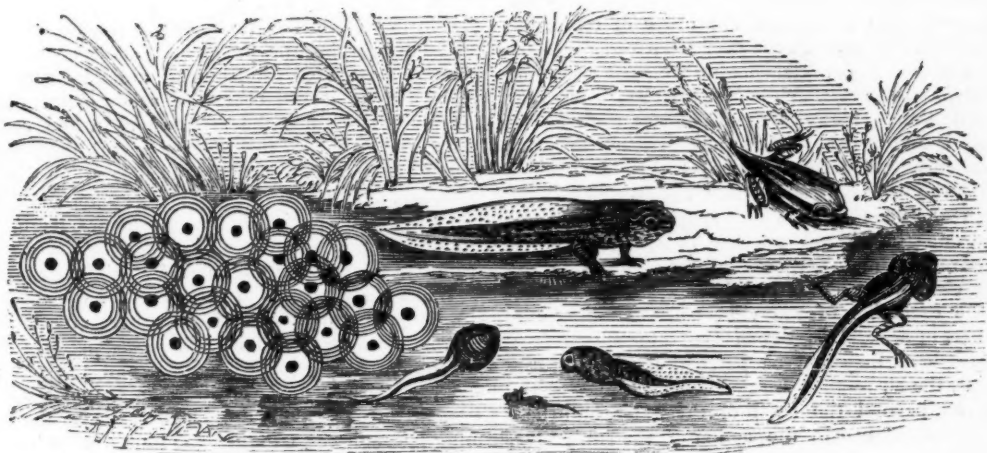
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## THE FROG.



PROGRESSIVE CHANGES OF THE FROG, FROM THE SPAWN TO THE TADPOLE STATE.



THE FROG.

Poor being! wherefore dost thou fly?  
Why seek to shun my gazing eye  
And palpitate with fear?  
Indulge a passing traveller's sight  
And leap not on in vain affright,  
No cruel foe is here.

I would but pause awhile to view  
Thy dappled coat of many a hue,  
Thy rapid bound survey;  
And see how well thy limbs can glide  
Along the sedge-crowned streamlet's side,  
Then journey on my way.

AFTER the descent of those warm showers which frequently refresh the earth in the month of July, a very singular phenomenon is often observed by those who pursue their way through meadows and

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lanes soon after the rain has ceased. Myriads of young frogs are to be seen leaping about in all directions; their appearance is so sudden and unexpected that it would almost seem that they had dropped from the clouds; while their very small size convinces the observer that they have but recently emerged from the tadpole state. This remarkable sight has given rise to the common superstition that frogs do indeed fall in showers from the clouds; and we find the extravagant idea maintained by some theorists, who affirm that the action of a violent wind is sufficient to elevate the spawn of frogs and the eggs of snails to the regions of the air, whence the creature in its perfected state is again returned

to the earth in the manner above mentioned. The impossibility of this, on account of the specific gravity of the eggs and spawn, is entirely overlooked by those who entertain the absurd opinion.

Frogs are placed by naturalists in the lowest rank in the animal kingdom, and that, not so much on account of their aquatic habits, which in some measure assimilate them with fishes, as on account of their structure, which differs in some respects from that of all other animals. The classification of all animals into such as breathe the free air, and such as breathe through the medium of water, does not hold good with respect to the order of reptiles to which frogs belong. In the case of all other animals, each has its proper element to which it especially belongs, and out of which it cannot exist for any considerable time. Many of the inhabitants of the air find their appropriate food in the water, and some of the water animals pass a portion of their time in the air, but the degree in which they are able to do this, though different in different species, has yet its limits, and the animal, whether in its embryo state, or arrived at maturity, cannot be exposed to the wrong element, beyond a certain period of time, without the extinction of the vital principle within it. The eggs of aquatic reptiles in general are, therefore, placed where they may be hatched in their proper element, the air:—they are deposited in holes in the sand, &c., beyond the reach of the water, and there left to be developed by the action of the sun's rays. But with the common frog, and other reptiles of the order we are now speaking of, the case is very different. The spawn of these animals, which consists of a large heap, or clustered mass of transparent eggs, in each of which the round black globule of the embryo may be seen, is deposited in pools and ditches where the water is shallow, and where the full influence of the sun and atmosphere may be felt to the bottom. There the eggs float on the water, having one side exposed to the air, and thus they abide the vicissitudes of the seasons, without any shelter from inclement weather. At one time they are frozen into a solid mass, at another they are pelted with heavy rain, apparently without receiving the least injury. The same pool which has perhaps remained frozen for a considerable time, long enough we should have thought to destroy effectually the living principle of the spawn, is yet, on the return of summer, swarming with tadpoles, or frogs in the first stages of their existence. No other vertebrated animals, save those of this family, are found to leave their eggs wholly unprotected, and exposed to the action of the weather, nor are any other animals possessed like them of what may be termed a double life. In the case of the common frog it is perhaps more correct to say, that it has two lives in succession; but in that of some others of this family, where the breathing processes are retained in both kinds, *i.e.*, where the animal is qualified to pass at pleasure its whole life in the water, or its whole life in the air, the creature is distinct from all others, and merits the term *amphibious*, to its fullest extent. Indeed this term is not strictly true in its application to any other animals than the several species of frogs just referred to.

Most of our readers must be well acquainted with the form of the *tadpole*. The disproportionate size of the head, and the length of the tail, in this little creature, give it a very curious appearance. The head is furnished with jaws, or mandibles, which are employed in nibbling animal or vegetable matters. These mandibles are furnished with extremely minute teeth, or denticulations, with which they may be even heard to gnaw the edges of the leaves on which they

feed. The tadpole is also furnished with a small kind of tubular sphincter or sucker, beneath the lower jaw, by means of which it hangs at pleasure to the under surface of aquatic plants, &c. The tail is the only organ of motion, and in order to make any progress in the water the tadpole is obliged to exert it with great velocity. While in this state, the animal breathes water only, being incapable of existence in the air.

The vast numbers of these creatures brought out by the warmth of a July sun, might seem at first sight unnecessary and unaccountable; but there is reason to believe that tadpoles perform an important part in purifying the ponds and ditches where they abound from such substances, animal as well as vegetable, as would otherwise accumulate, become putrid, and corrupt the atmosphere in the vicinity. While they are thus acting their part in the economy of nature, their own numbers become reduced to the necessary limits, by the attacks of different aquatic birds frequenting the ponds and marshes, dabbling in the shallow pools, and gaining part of their subsistence from the small fishes, tadpoles, &c., abounding there.

When the appointed time arrives for the change of the tadpole from being a breather of water to becoming a breather of air, the new members which it requires are gradually added, and the old ones shed, or absorbed. At this time tadpoles may be seen with feet partially developed, while yet the swimming tail adheres, and thus the imperfect animal has a strange and ambiguous appearance, partaking of the form of the frog and lizard. The tail however soon begins to decrease, at first gradually, and at length so rapidly as to become quite obliterated in a day or two. The celebrated Lord Bacon displays an unaccountable degree of ignorance as to the formation of the frog, and its gradual progress from the tadpole state, to that of the complete animal. In his *Natural History* he mentions as a peculiar and extraordinary circumstance, that young frogs and toads have sometimes been observed *with tails*, and that the years in which such phenomena have been remarked, have proved more than commonly pestilential and unhealthy; from whence he draws the conclusion, that the appearance of such tailed animals "argueth a great disposition to putrefaction in the soil and aire." When the lungs of the tadpole are fully developed, the character of the land animal predominates. During the tadpole state the system of circulation had been that of a fish. The heart had but one auricle and one ventricle; it was merely a branchial heart, sending the blood to the gills by its contractions. The systematic circulation was performed by the arteries alone, and had little force or velocity, and consequently little heat. But when the gills disappeared, the arterial branches by which the blood was conveyed to them also became absorbed, only two remaining which were directed to the two lungs. A portion of the blood which the heart propels is carried to the lungs, while the remainder is employed in the systematic circulation, without being acted on by air. As the action of the air on the blood appears to be the grand source of energy to the system of the whole animal, it is natural that frogs, in whom the portion of blood subjected to its influence is very small, should be the cold, enduring creatures that we find them to be. The slowness of circulation in these animals, with the transparency of their skins, has rendered it possible to make some very interesting observations on the passage of the blood from the arteries to the veins. By means of a microscope of high power, this delicate process may be seen through the integument which covers the web of a frog's foot.

Arteries and veins have no communication with each other at their remote extremities, except by means of those capillaries, which are so small as to be invisible to the naked eye; hence the interest which is attached to the observation in question.

The frog is not in possession of the same sort of apparatus for working the lungs as other animals. It has neither ribs nor breast-bone, and therefore the thorax does not act in breathing; it receives air through the nostrils, but an effort is required to send the air into the lungs. This is performed by means of the tongue, which is first raised to close the nostrils, and then turned gradually backwards so as to force the air all contained in the mouth to the cells of the lungs. This constitutes one respiration, and as the tongue is removed, the air again enters the nostrils, while the muscles of the abdomen contract and expel the air which has performed its office. Thus the frog respires without any assistance from the mouth; indeed if the mouth were kept forcibly open, respiration could no longer proceed, and the animal would as certainly die of suffocation, as would the higher animals if the mouth and nostrils were kept shut.

The muscular power of the frog is made evident to us by the prodigious leaps which it is able to make. These leaps sometimes raise it in the air to twenty times its own height, and convey it, at one bound, over a space fifty times the length of its own body. The mechanism which gives such power to its lower limbs also constitutes the frog an excellent swimmer, and in this situation the action of the limbs bears a remarkable similarity to that of man when so employed.

The skin of frogs is smooth, without scales, hair, or any other appendage, and by means of its pores it absorbs and evaporates fluids very rapidly. By this means it is supposed that the air contained in water is made subservient to the respiration of the animal. Dr. Townson found that a frog will sometimes absorb in half an hour half its own weight of water, and in a few hours nearly its entire weight. When the animal so filled was placed in a dry, warm situation, it gave off this fluid almost as rapidly as it had accumulated it. He is of opinion that the frog tribe never drink, but are supplied by the process of absorption. When kept in a comparatively dry situation, frogs become thin and meagre, but their plumpness is quickly restored when they have the power of renewing their supply of moisture.

These harmless creatures subsist on insects, larvæ, &c., and are therefore beneficial in gardens. For the readier obtaining of their prey, the structure of the tongue in these animals is extremely well calculated, being so situated, that the root is attached to the fore rather than the hind part of the mouth; and when at rest, lies backwards, as if the animal were swallowing the tip. By this means, the creature is enabled to throw it out to some distance from the mouth, which is done with great celerity, and the prey is secured and swallowed with an instantaneous motion, so quick that the eye can scarcely follow it. They doze out the cold season in holes of the earth, or at the bottom of the water. They are not in the least degree injurious to man; they have no weapons either of offence or defence; and though their croakings are by no means pleasing to the ear, and their forms are not such as we can call beautiful, yet the peculiarity of their structure, and the use they are of, both in the tadpole state and in their after form, must render them interesting to the naturalist, and worthy his especial notice. The wood-cut at the head of this article represents the animal in all its appearances,

from the spawn to the complete frog. The largest figure represents a frog of about four years old, in the act of securing its prey. A frog of five or six years old is considerably larger than the animal here represented. At the age of five or six, it may be said to have attained its full size, and it is supposed to live at least twelve or fifteen years.

## PLYMOUTH AND DEVONPORT.

### II.

It was in the reign of William the Third that a Royal Dock was established at Plymouth, or rather in the parish of Stoke Damarell, in the neighbourhood of Plymouth, and it is from this period that we may date the rise of the town now called Devonport. The various buildings in and near this town belonging to the Royal Navy have been in a progressive state of improvement from the time of William the Third to the present day.

The Dockyard at Devonport is situated on the eastern bank of the Hamoaze, or harbour, and is separated from the town by a lofty wall: it includes an extent of seventy acres of ground. On entering the gates, the first building seen is the Warden's house, and near this is the Dockyard Chapel: the latter was built by government for the use of those living in the yard, but it is also open to the inhabitants of Devonport: the chaplain receives, in addition to a stipend from government, twopence per month from the pay of each of the officers and seamen belonging to ships laid up in ordinary. Near the chapel are the Military Guard House, the Navy Pay Office, the Surgery, and a large reservoir. The new North Dock, constructed in 1789, is two hundred and forty feet long, eighty-five broad, and twenty-nine deep, and is said to be the largest in England: ships are occasionally taken into this dock with their masts and rigging complete. Near this is a smithery, a stupendous building, two hundred and ten feet square, containing forty-eight forges. Several hundred anchors, some weighing five tons each, are sometimes to be seen piled up on the wharf in front of this building. Near the smithery are the plumber's, bricklayer's, and stone-mason's shops.

There are various other docks besides that one of which we have spoken: one is called the North Dock; another the Double Dock; and a third is the dock constructed in the reign of William the Third, and now used principally for repairing frigates. Near the last-mentioned dock is the basin constructed at the same time: it is a large excavation, communicating with the harbour by means of an opening about seventy feet wide: it is of an oblong shape, and contains the boats and launches belonging to the yard. Near this basin is a kiln, for steaming such planks as are required to assume a curved form, saw-pits, and pump-houses, containing machinery for drawing the water from the docks.

The Rigging-house is a splendid building, four hundred and eighty feet in length, and three stories high: it forms one side of a quadrangle, the area of which is entirely composed of stone and iron, and is called the "combustible storehouse." Vessels used formerly to be built in the open air; but they are now built in spots covered with immense roofs. Near these building places, or "slips," as they are called, is the Mast Pond, which is a large piece of water, enclosed from the harbour by a strong wall, ten feet thick, paved at the top with granite: in this pond or basin masts and spars are deposited, in order to prevent them from being injured by exposure to the sun.



The Rope-houses are buildings on the same magnificent scale as the other parts of the establishment: they consist of two limestone buildings, twelve hundred feet long, parallel to each other, and two stories high. Cables are made here one hundred fathoms in length, and measuring twenty-five inches in circumference: a cable of this size weighs upwards of 116 cwt. and costs about four hundred pounds.

Among other objects worthy of notice are,—a Mould Loft, in which are deposited and prepared moulds or plans of ships intended to be built; the *Camber*, a canal sixty feet wide, stretching far up into the interior of the yard—the stores intended to be used in the yard, are here unloaded from vessels by means of immense cranes; a Graving Slip, a place in which the copper sheathing of small vessels is cleaned; a depot for rigging and sails; two large oblong edifices, separated by a flight of steps, and standing in front of the four southern docks: these buildings are devoted to offices, and artificer's workshops.

Such is a brief description of the Dockyard. In an excellent *Guide to Plymouth and Devonport*, written by a son of the poet Carrington, are the following remarks:—

A person unacquainted with the economy of our dockyards, and particularly with that of Plymouth, is apt to associate the ideas of bustle—of deafening clamour—of confused masses of wood, iron, &c.,—of workmen eternally jostling and thwarting each other—of walls and buildings blackened with sulphurous vapours—of pitch, tar, varnish, paint, chips, shavings, dirt, everywhere offending the eye, and almost debarring access to vessels in the docks. He is, on entering the Plymouth dockyard, pleasantly undeceived. At first he does not see even the ships in dock, nor the storehouses, and, unless some extraordinary operation, such as that of raising a vessel, is going on, he does not even hear, or scarcely hears, the sound of a hammer. The broad avenue from the dockyard gates has not a chip on its surface—it is as clean as the indefatigable broom can make it. There, with an aspect of simple grandeur, rises the dockyard chapel: the guard-house is near it, with the sentinel slowly pacing in front; a few passengers, perhaps officers of the navy or of the establishment, or haply a party permitted to view the yard, are passing near it. An air of serenity, of order, of cleanliness, pervades the whole spot. It is not till the stranger or visitor has passed "the Row" (the houses in which the principal officers reside,) and has descended one or two flights of steps that lead to the area where the docks are excavated, and where the sheds, storehouses, &c., are erected, that he is sensible of the presence of business. But here a thousand acts are going on—the most remarkable operations are performing;—the eye of skill,—the arm of industry—all that consummate ingenuity and undaunted labour can produce, are there;—the mighty machine before us is the scene of the most complicated duties—yet there is no confusion;—every one is at his post, and the spectator is compelled to admire the arrangements which have produced such important results.

Besides the numerous buildings forming collectively the Dockyard, there are other Government establishments in and near Devonport. One of these is the Gunwharf, lying to the north of the Dockyard, and built more than a century ago. This wharf encloses nearly five acres of ground, and consists principally of storehouses. The principal buildings are two spacious storehouses, three stories high, in which are deposited an immense number of muskets, pistols, cutlasses, and other weapons, ranged along the walls. There are also storehouses of powder, shot, gun-carriages, &c. The space between the building is occupied by piles of cannon and pyramids of cannon-shot.

Near a suburb, called Morice Town, is the Keyham Powder Magazine, the principal dépôt for gunpowder for the supply of the ships, garrison, &c. The Magazine consists of several detached edifices, surrounded

by a high wall, and guarded with the utmost care from explosions, &c. Some years back, in addition to this magazine, five line-of-battle ships were fitted up as floating magazines, and kept supplied with forty thousand barrels of powder, and several million ball-cartridges, besides other ammunition.

In immediate correspondence with the Magazine is the Laboratory, a collection of workshops, composed of about twenty detached buildings, surrounded by a lofty wall. These workshops are occupied by smiths, harness-makers, and other artificers, who are employed in making ball-cartridges for troops and field-pieces, and in various other duties connected with the fitting out of a military expedition. In relation to these powder magazines or depôts, the following circumstance has been narrated:—On the 26th of June, 1810, at two o'clock, A.M., twelve French prisoners escaped from the *Genereux* prison-ship, in Hamoaze, and making themselves masters of the *Union* powder-hoy, which was lying about eighty yards from the magazine pier-head, got under way for France. She was laden with about three hundred barrels of powder, belonging to His Majesty's ship *Defiance*. The Frenchmen overpowered the watchman, named Gill, and conveyed him to France, where he was detained a prisoner till the peace. Although some of the sentinels and watchmen saw the *Union* proceed down the harbour, they had not the least suspicion, until five o'clock, of her being navigated by any but her own crew. A report of the circumstance was communicated to the officers at Keyham Point, who suspected the real state of the transaction, and immediately reported the affair to Admiral Young (then Port Admiral,) who despatched cruisers in pursuit without success, as they stretched off mid-channel, while the sloop shaped her course close alongshore till night, when she bore away, and safely reached Morlaix, in France.

The Military Hospital is situated near Stoke Church, and contains accommodation for five hundred patients. This noble edifice is built of grey marble, and comprises four large square buildings, similar in size and form, and connected by a piazza of forty-one arches, supporting a terrace in front of the ward windows for the use of convalescents. There is a commodious landing place on the bank of Stonehouse Creek, at which patients from transports and the distant parts of the garrison are disembarked.

The Royal Marine Barracks at Stonehouse are a handsome range of buildings, forming a rectangle, in the midst of which is a spacious parade. On the south side are two entrance-gates and a guard-house. These barracks are calculated to contain about a thousand men. The mess apartments are commodious and well fitted up. At a short distance from these Barracks are the Long Room Barracks. These consist of several insulated buildings, chiefly of wood, which will hold about nine hundred men.

The Dockyard possesses a diving-bell, which has been much used in the various submarine excavations carried on in the neighbourhood. It is made of cast-iron, and weighs about forty-two hundredweight. It is six feet long, four feet broad, and five high; and has a capacity of one hundred and twenty cubic feet. To admit light to the interior, it is provided with twelve convex lenses inserted in the top, each eight inches in diameter. When the bell is sunk in clear water, even to a considerable depth, the light admitted through the lenses is sufficient to enable the diver to read the smallest print. An air hole is made at the top, and from thence a leathern hose leads to the vessel or barge above. An air-pump on board the vessel forces down a supply of fresh air to the bell:

this air is admitted to the bell by a peculiar kind of valve\*.

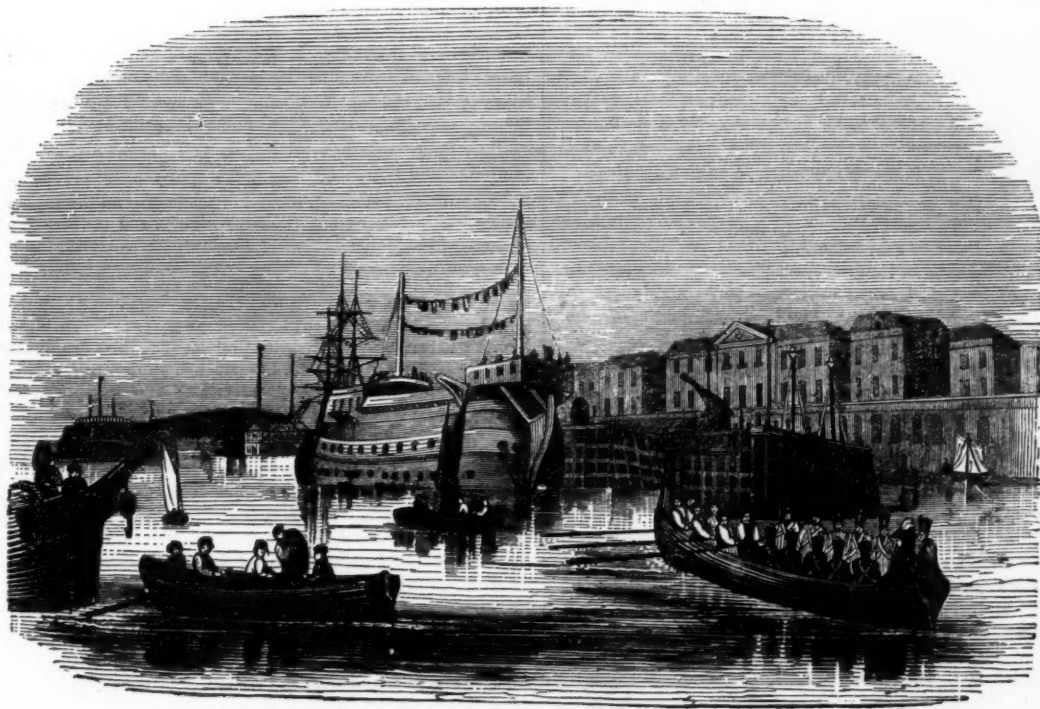
One of the most magnificent of the Government buildings is the New Victualling Office, recently erected on the tongue of land called Devil's Point. This extensive range comprises the long storehouse,—the brewing establishment,—the mill and bakehouse,—the slaughterhouse, &c,—the Melville storehouse,—the cooperage,—and the private dwelling-houses of the officers, superintendent, &c. The purpose of all these buildings may be partially guessed from their names: everything that has reference to the food and drink of the seamen, employed in the ships fitted out at Plymouth and Devonport, comes under the cognizance of the officers of this establishment. The long storehouse contains a substantial range of buildings, of plain architecture, three stories in height, with a quay in front, two hundred and fifty feet long, and fifty feet broad. The brewing establishment forms three sides of a square, measuring two hundred and fifty feet by two hundred, and has a granite arcade, of five arches in width and two in depth, in the central part of the front facing the water. The mill and baking establishment form a perfect square, the water front and flank of which correspond with those of the brewhouse. The Melville storehouse is also a perfect square. The cooperage and the slaughterhouses are on the same large and extensive scale as the other buildings. Many of these buildings are roofed with iron, and the lateral inclinations with slate.

The entire premises of the Victualling Yard comprise an extent of thirteen acres: the site was prepared in a singular manner: seven acres of ground were excavated, and the materials thus produced from the excavation were thrown into the sea, by which the other six acres were, as it were, stolen from the sea. The mass of hard limestone rock thus cut from

one part of the site, and employed to form the other part, amounted to the enormous quantity of 300,000 tons. There are three entrances to the pile of buildings, the principal of which is in magnificent style, the whole formed of granite. As part of the building may be almost said to be built on the sea, it was necessary to erect a strong sea wall between the quay and the sea. This quay is 1500 feet long. The doors, window-frames, internal columns, girders, lintels, &c., are of cast-iron.

Another building at Stonehouse is the Royal Naval Hospital, opened in the year 1762 for the reception of sick and wounded seamen and marines. The Governor is a Post-Captain in the Navy. The hospital stands on a pleasant ascent, rising from Stonehouse Creek. The area of the whole is about twenty-four acres, thirteen of which are occupied by a lawn where the convalescent patients may take exercise. The hospital consists of ten buildings, surrounding an extensive quadrangle, each building containing six wards, and every ward capable of receiving sixteen, or, in cases of emergency, twenty patients: so that twelve hundred sick men can be received here at once. In order to prevent as much as possible the liability of infection or contagion spreading from one part to another, the ten buildings are entirely separated from one another, and communication can be had from one to another only by means of a piazza, surrounding the whole building. Besides these principal buildings, there are a chapel, the dispenser's apartments, a dispensary, an operating room, cooking rooms, victualling rooms, and other apartments. Hot, cold, and shower-baths, a wash-house, drying-ground, &c, are at a short distance from the main part of the building. In the first fifteen years of the present century no fewer than 48,452 seamen and marines, wounded or ill, were received into this admirable establishment, a great proportion of whom returned cured to the service as effective men.

\* See also *Saturday Magazine*, Vol. XIV. p. 95, 145, 199.



DOCKYARD, DEVONPORT

THE COMPLAINT OF THE FORGET-ME-NOT,  
SHOWING THE PAINS AND PENALTIES OF POPULARITY.

The blue-eyed *Forget-me-not*, beautiful flower,  
Half-wooded and half-stolen I brought from her bower,  
By the bright river's brink, where she nestled so low,  
That the water o'er stem and o'er leaflet might flow :  
As if, like Narcissus, she foolishly tried  
To gaze on her own gentle face in the tide.

Half inclined, half reluctant, the flower bade adieu  
To the friends left behind in the dell where she grew,  
And a few shining drops from the river spray flung,  
Like tears of regret on her azure eyes hung ;  
But I kissed them away, as a lover had done,  
In joy that my fair river-beauty I'd won.

And then swiftly I hied to my lone desk away,  
Lest my flower should droop, grow dim, and decay ;  
For methought I once more would pourtray the soft hue  
Of that smooth vivid green, and that delicate blue :  
And while o'er the semblance I silently bent,  
My fair sister sighed forth this touching lament :—

Alas ! it is a weary thing

To have such great renown ;

Ten thousand bards my praises sing,

Through city, shire, and town.

From scribblers that earn pence a line,

To those that win a pound,

None think their poesy will shine,

Till it my praise resound.

And Misses, in those curious books

Called "albums," and so forth,

Paint a blue marigold, whose looks

Proclaim her none of earth ;

On which the parson, if he's young,

Or doctor, if he's handsome,

Must perpetrate a doleful song :

Oh ! will no fairy ransom

My face from such a libel vile ?

And clear my reputation,

So slurred by treachery and guile,

From such an imputation,

As that I set the twaddlers on

To so berhyme and saint me !

As I'm a flower, they know no more

Of me,—than those who paint me.

The human beauties of the land,

Must sit for days and hours,

To let the painter's mimic hand

Each feature scan ;—but *flowers*

They think may just be drawn

As ignorance may like them ;

Leaves snipt and shaped like gauze or lawn,

As whim or fancy strikes them.

E'en "botanists" mistake my form,

That's seen by brook and fountain\*,

For my rough cousin† who's clad warm,

To dwell on moor and mountain.

But this I'd pardon, if the bards'

And poetasters' chorus

Were silenced once,—we'll give rewards

To all who'll no more bore us.

That silly lover tumbling down

And drowning in the Rhine,

First set the jingle-makers on ;

And then that book of thine,

O Ackermann ! like finger-post,

Directed nymphs to me,

And e'er since then, the buzzing host

Have dinned incessantly.

O ye fair ladies of Parnassus,

(Although ye are old-fashioned,)

If ever in your flights ye pass us,

List to our prayer impassioned ;

And find another victim bud

To serve your superficial

Vot'ries—'twould do in wax, or wood,

Or cambrie artificial.

Give it a name that nicely heads

An elegy or sonnet,

And the whole clan of X. Y. Z.'s

Will start a-rhyming on it.—L. A. TWANLEY.

\* *Myosotis palustris*.

† *Myosotis Alpestris*

VIOLETS.

SPRING flowers, how I love *them* ; flowers that come only in the Spring. If the season is mild, you may find, in November even, a stray wall-flower, or polyanthus in the garden ; or a weakly primrose in the hedge ; but the snow-drop and crocus in the neat border, and the violet on the sunny bank ; if you find these, it must be Spring. And talking of violets, here we are, in the beautiful lane where we find so many ; white violets mostly, and such large ones, and so sweet. I always think of that lane when I see a bunch of violets : the green moss, and the snail-shells, brown and yellow, that we picked up there, and the sprays of blackthorn, leafless, but studded with their delicate blossoms ; all is present to my mind. Long years after this, in the crowded market of the neighbouring city, I would seek out the neat farmers' wives, who came from our village, and its neighbourhood ; and as I purchased their sweet violets, could almost fancy I knew the very lanes where they had been gathered. How pleasantly in the very heart of the city, and on its busiest day, does the farmer's wife in her accustomed place, remind you of country scenes ! There she stands, with her various goods nicely arranged ; the fowls so white and plump, the snowy pail with its store of butter, each delicate half-pound wrapped round with the cool dock leaf ; the eggs, the cream-cheese, the large red apples, and the violets. Who will buy them ? A penny a bunch ! Surely they are worth it for the memories they bring ; besides, as the mother pleasantly observes, " It is the children's money." In the gray twilight, along the quiet hedge-rows, they went plucking one after another, till the early evening closed in, and they hastened home with the treasure. Who will buy them ? Some mother perhaps will take a bunch of them to her sick child, and in her quiet chamber help those weak hands to arrange them in the glass. Some young sempstress will come,—she and her companions were wondering yesterday as they bent over their weary work, wondering whether the violets were come ; and she is planning a kind surprise by taking them a bunch. Here comes a smart footman ; his mistress fancies some violets, and she will place them on her elegant chiffonier, in the opal vase, beside the Indian box, and amid the gay confusion of cut glass, and embroidery.—*Recollections of Childhood*.

THE BROMPTON STOCK.

WE cannot forbear relating the laughable and beneficial effect the sight and name of this flower had on the spirits of an acquaintance, with whom we were making a tour in Normandy, in the first summer after the return of the Bourbon family to the throne of France. He had been induced to join a small party, and to leave his home, for the first time, to visit the opposite coast ; but so truly British were his habits, that nothing could please or satisfy him. The soup was meagre, the pottage was acid, the peas were sweet, the wine was sour, the coffee was bitter, the girls were brown, their eyes too black, their caps too high, their petticoats too short, their language an unintelligible jargon, their houses old, their inns dirty, the country too open, the roads too straight : in short, he saw everything with such discontented eyes as to render the party uncomfortable, until good fortune led us to a rustic inn, where in a small garden were growing several fine stocks, which he affirmed were the first good things he had ever seen since he left Sussex, and on hearing l'hôtesse acknowledge them as *Girostier de Brompton*, he insisted on halting at her house, where he treated the party with *un déjeuner à la fourchette*, and left the village with a sprig of the Brompton stock in his button-hole, his eyes sparkling with champagne and good humour, which lasted for the remainder of the journey, during which time he often said, " Thanks to the Brompton stock."—*PHILLIPS' Flora Historica*.

It is an exquisite and beautiful thing in our nature, that when the heart is touched and softened by some tranquil happiness or affectionate feeling, the memory of the dead comes over it most powerfully and irresistibly. It would almost seem as though our better thoughts and sympathies were charms, in virtue of which the soul is enabled to hold some vague and mysterious intercourse with the spirits of those whom we dearly loved in life.

Alas ! how often and how long may those patient angels hover above us, watching for the spell which is so seldom uttered, and so soon forgotten.—*DICKENS*.



## THE WHITE WAX INSECT OF CHINA.

*(Cicada limbata.)*

THE production of substances bearing resemblance more or less to the nature of wax or tallow is attended with some remarkable circumstances, arising from the great differences in the sources from whence they are derived;—thus, tallow is a coarse inflammable substance derived from animal fat; spermaceti is derived from a liquid found in a cavity in the head of the sperm whale; wax, that is, the substance commonly known by that name, is the product of the bee. Every nation and almost every tribe, excepting those in the lowest grade of civilization, is acquainted with some substance analogous in some respects either to wax or tallow; but those which are known to the Chinese are but little known to English readers, and we will therefore briefly detail their nature and properties.

The substances to which we allude are, 1st, a species of wax produced by an insect found in various parts of the Chinese empire; and 2nd, a kind of tallow collected from the branches of a tree also common in that country. This remarkable insect, and the plant on which it is represented in our cut, claim our notice, both on account of the singular manner in which the inflammable substances to which we allude are produced by them, and of the importance of those substances in domestic economy. There is no absolute connexion between the tree and the insect, as represented above; but we have classed them together as a matter of convenience, on account of the similarity between their products.—The larva state of the insect is here depicted as well as the more perfect form, since it is in the former stage of its existence that the white wax is produced.

It is natural to suppose that such remarkable productions would attract the attention of the comparatively few travellers and naturalists who have managed to gain admission into China. Such was the case; and we accordingly find that observations were made on their nature and growth by those learned Europeans residing in China whose object was to promote arts and sciences as well as to disseminate the truths of the Christian religion. Du Halde and the other early writers on China, describe the insect and the tree in a cursory manner; but Sir George Staunton, in his very valuable work on China, enters into the description at greater length. It appears that accident led him to the observation of some swarms of uncommon insects, busily employed upon some small branches of a shrub, not at that time either in fruit or in flower, but presenting an appearance somewhat similar to that of the *privet*. These insects, each not much exceeding the size of a common fly, were of a curious structure, having pectinated appendages rising in a curve, bending towards the head, not unlike the form of the tail feathers of the common fowl, but in an opposite direction. Every part of the insect appeared to Sir G. Staunton to be perfectly white, or at least to be completely covered with a white powder. The stems of the particular shrub frequented by those insects was found to be entirely whitened by a substance or powder strewn upon them, the same in nature, apparently, as that with which the body of the insect was covered.

Such is the substance of the information which the last-mentioned writer gives us respecting the wax-insect. From the accurate figures and description which his volume contains, it is evident that the creature which produces this white wax is an imperfect insect, or technically speaking the pupa of an insect, which in its mature state is furnished with wings. Gordon in his *History of China*, when speak-

ing of these wax-producing insects, says that there are in the plains of Houquang vast numbers of little *worms*, which produce wax in the same manner as bees do honey; but we must here understand “worms” to mean insects not yet arrived at maturity, on the same principle that the larva of the *Bombyx mori*, although belonging to the *moth* tribe when perfect, is called a *silk-worm*.

Having thus spoken of the views of some of the writers on Chinese subjects respecting this insect, we will proceed to describe its nature and growth more particularly. The insect was determined by Stohl, a Dutch physician, to be the pupa of the *Cicada limbata*.

The insects are white when young, and it is at that period they form the wax. When they become old, they attain a blackish chesnut colour, and form little pelotons on the branches of trees. These pelotons, when first formed, are about the size of a grain of millet; but towards the beginning of the spring they spread and enlarge in their dimensions; they are attached to the branches somewhat in the manner of bunches of grapes, and give to the tree on which they are deposited the appearance, at first sight, of being loaded with fruit. The natives gather these pelotons about the month of April or May, and having wrapped them up in the leaves of the *Yo* (a kind of grass with broad leaves), suspend them from the trees. When the warm Midsummer weather arrives, the pelotons open by the influence of the heat, the insects emerge from them, crawl about on the leaves and stalks, and deposit the wax for which they are valued.

This wax, which is called by the Chinese *Tchang pe la*, is, when deposited on the leaves and branches, somewhat similar to a white grease; but it speedily hardens, and then assumes more the character of wax. When in a fit state, it is scraped from the branches of the trees, generally in the autumnal months, and collected in a vessel: this vessel is then exposed to heat, the wax is melted, and strained. By pouring the melted wax into cold water, it is made to coagulate into a pasty form, and is then easily formed into cakes. In its prepared form the wax is found to be very white and glossy; and when mixed with oil, and made into candles, is said to be much superior to the wax of bees for that purpose; indeed it is said by Sir G. Staunton, that the white substance not only coagulates into wax, but will cause oleaginous substances to coagulate likewise, so as to be formed into candles; for, if one part of this wax be dissolved in three parts of heated olive oil, the whole, when cold, will coagulate into a mass, possessing a degree of firmness nearly equal to that of bees'-wax. Chi Tchin, a Chinese writer, states, that it was not until the dynasty of Yuen that the wax made by these insects began to be known in China; but that as soon as its properties became known, persons of all ranks began to use it, both in medicine and in domestic economy. The medicinal virtues of the wax are spoken of in high terms by many of the Chinese physicians, particularly by one named Tchi-hen. It is said to be a drug deemed absolutely necessary to Chinese surgeons, on account of its tendency to make flesh wounds close, to stop the effusion of blood, to appease pain, to unite dis severed nerves, and to assist in the adjustment of a dislocated bone:—how far an European practitioner would be willing to depend on the wax for all these valuable qualities we do not know; but we must confess that this enumeration of curative properties too much resembles the style of Culpeper and old Gerard to seem worthy of implicit belief. There is, however, no doubt that this wax is very valuable as a material of which candles may be made, whatever be its proper-

ties in a medicinal point of view. The wax-producing insects are found in most of the south-east provinces of China, as well as in Cochin China, but the most valuable are found in the provinces of Se-tchuen and Yuman, and from the territories of Hen-tcheou and Yung-tcheou.

Having thus endeavoured to convey an idea of the white wax of China, and its mode of production, we will proceed briefly to describe the tallow principally employed by the natives. This tallow is a vegetable production, growing on the *Croton sebiferum*, the poplar-leaved croton, or tallow-tree. This tree is about the height of a large cherry-tree, and it is from the fruit of the tree that the substance in question is derived. The fruit is enclosed in a kind of shell, called by the Chinese Yen-kieu, which, when sufficiently ripe, opens in the middle, somewhat in the manner of a chesnut: when exposed by this means, the fruit displays itself in the form of white kernels, about the size of a small hazel nut. The kernels have many of the properties of tallow, and are used to make candles in the following manner:—the kernels are mixed with a small proportion of common oil, and melted: from this melted matter the candles are made nearly in the same manner as in Europe; and as the tallow is rather too soft to remain in a coherent state, the candles are dipped in a vessel containing the insect wax in a melted state, whereby they become coated with a crust of wax which preserves the tallow from too rapidly melting. The above is the substance of what Du Halde says on the subject; and in addition thereto other writers inform us that the fruit, in its external appearance, bears some resemblance to the berries of the ivy; that the capsule, when it opens after ripening, separates into two, and sometimes three divisions; that each kernel is attached by a separate footstalk, and is covered with a fleshy substance of a snowy whiteness, which contrasts beautifully with the purple tint presented by the leaves of the tree at that period; and that the fleshy substance is separated from the central kernel by crushing and then boiling in water. It is said by some writers that the candles made from this substance are firmer, and more free from offensive odour, than those made of European tallow; but that they are not equal to candles made of wax or spermaceti. The higher classes in China use candles made of the insect wax, which yield a clear light without smoke; but this substance is too scarce and costly to be used by the middle or humble classes.

It is said that the tallow-tree is now cultivated in the West Indies, where it thrives well and produces fruit; and hopes are entertained that, by proper management, its cultivation may become very advantageous.

Lieutenant Moodie, in his *Journal of a Residence in South Africa*, speaks of a peculiar kind of wax berries, which grow in great abundance upon small bushes in the sand hills near the African shore, and yield a substance partaking of the nature of wax and tallow, which is mixed with common tallow, and used by the colonists for making candles. The berry is about the size of a pea, and is covered with a bluish powder. They are gathered by spreading a skin on the sand, and beating the bushes on which the berries grow, with a stick. When a sufficient quantity of the berries is collected by this means, they are boiled in a large quantity of water, and the wax is skimmed off as it rises to the surface. The wax when all skimmed off, is poured into flat vessels and allowed to cool, when it becomes hard and brittle, and yields a metallic sound when struck. The cakes thus formed are of a deep green colour, and are sold for the same price as common tallow. The berries which produce

this tallow are a favourite article of food for the wild pigs, which are numerous in Southern Africa.



THE WHITE-WAX INSECT.

#### EARLY-RISING.

NEXT to temperance, a quiet conscience, a cheerful mind, and active habits, I place early rising, as a means of health and happiness. I have hardly words for the estimate I form of that sluggard, male or female, that has formed the habit of wasting the early prime of day in bed. Putting out of the question the positive loss of life, and that too of the most inspiring and beautiful part of each day, when all the voices of nature invite man from his bed; leaving out of the calculation, that longevity has been almost invariably attended by early rising; to me, to late hours in bed present an index to character, and an omen of the ultimate hopes of the person who indulges in this habit. There is no mark so clear of a tendency to self-indulgence. It denotes an inert and feeble mind, infirm of purpose, and incapable of that elastic vigor of will which enables the possessor to accomplish what his reason ordains. The subject of this unfortunate habit cannot but have felt self-reproach, and a purpose to spring from his repose with the freshness of dawn. If the mere indolent luxury of another hour of languid indulgence is allowed to overrule this better purpose, it argues a general weakness of character, which promises no high attainment or distinction. These are never awarded by fortune to any trait but vigor, promptness, and decision. Viewing the habit of late rising, in many of its aspects, it would seem as if no being, that has any claim to rationality, could be found in the allowed habit of sacrificing a tenth, and that the freshest portion of life, at the expense of health, and the curtailing of the remainder, for any pleasure that his indulgence could confer.—FLINT.

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